Department of Microbiology

PROGRAM SPECIFICATIONS FOR:	Master Degree in Infection Control and Management	**CODE**: 1706790
UNIVERSITY: Alexandria		**FACULTY**: Medical Research Institute

PROGRAM SPECIFICATION

A- BASIC INFORMATION

1- Program Title:	Master Degree in Infection Control and Management
2- Program Type:	Single (✓) Double ( ) Multiple ( )
3- Department(s):	Department of Microbiology
4- Program Coordinator:	Prof. Dr. Eglal El Sherbini
5- External evaluator(s):	**Prof.Dr. Maha Abdel Aziz Ahmed Eltouny** . Prof. of internal medicine faculty of medicine, University of Ein-Shams. Consultant of Infection control Head of infection control Team and Committee , Faculty of medicine , University of Ein-Shams
Last date of program Specification Approval:	**5/6/2014**

B- PROFESSIONAL INFORMATION

1- Program aims:

The purpose of this program is to:

1. Enhance understanding the Importance of Infection Control Program and importance of Infection Control discipline in the Health Care Setting
2. Enable the student to understand the importance of development of a clear and firm organizational structure to achieve reduction in infection rates among patients and staff.
3. Emphasize the close interaction that occurs between the medical microbiologist/clinical scientist and the hospital employees.

4. Emphasize the role of an effective occupational health program in the healthcare setting.
5. Enable the student to formulate a management strategy to care for infectious patients and prevent further spread of disease.
6. Enhance understanding of the nature of communicable disease.
7. Enable the student to develop strategies for surveillance, control and prevention of infection in the different departments in hospital and also in the community.
8. Provide the infection control practitioners and other staff with a systematic training in the sciences relevant to infection control.
9. Enable the infection control practitioners and other staff to take responsibility for, the infection control service
10. Use systematic approaches to design and conduct scientific research.

2- Intended Learning outcomes of the course (ILOs)

a) Knowledge and Understanding:

a1. Discuss the key concepts and principles of IC .
a2. Recall the Organizational structure and job description for IC positions.
a3. Define the Role of microbiology department in infection control and the microbiological testing process and the importance of close interaction between the medical microbiologist/clinical scientist and the rest of hospital employees.
a4. Review IC policies related to construction of hospital building and to the different aspects of hospital environment (air, water and food).
a5. Recall the infection control practices provided in the different special high risk settings within the hospital and the details of ethical and legal practice and quality standards of the practice
a6. List the IC aspects of occupational health and safety and the advanced occupational safety issues.
a7. Discuss the basis of sterilization and disinfection and a working knowledge of the policies and procedures used in local hospitals.
a8. Describe the mechanisms of action of and bacterial resistance to antimicrobial agents.
a9. List the different types and causes of Health care associated infections & its prevention
a10. Describe the Surveillance strategies of nosocomial infections and the management of outbreaks
a11. Discuss the IC strategies for the Common organisms causing HCAIs including multi-drug resistant organisms.
a12. Summarize the ethical considerations in different types of scientific research.

b) Intellectual Skills:

b1. Critically analyze the relationships between human and micro-organisms

b2. Appraise the role of the infection control practitioner, risk assessment and program management.

b3. Analyze the causal relationship of microbes and diseases and formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions.

b4. Distinguish the different aspects of hospital environment and appraise the importance of construction of hospital building according to infection control policies.

b5. Appraise the infection control practices provided in the special high risk settings within the hospital

b6. Calculate the risk of occupational exposure to infectious diseases by job classification or department (e.g.,TB, blood-borne pathogens) and assist with analysis and trending of occupational exposure incidents.

b7. Distinguish the basic principles of decontamination to clinical practice and examine compliance with regulations and standards.

b8. Analyze the microbiological results and distinguish the risks of emergence of antimicrobial resistant organisms or a new pathogen and the importance of antibiotic formulary

b9. Examine policies and procedures related to IC and assess the educational needs of health care workers

b10. Compare strategies suggested for surveillance and process validation, investigate outbreaks and interpret strategies used in disaster management

b11. Design a systematic approach for preventing the transmission of blood-borne pathogens and other communicable diseases (TB) and for dealing with cases accidentally exposed to certain pathogens in health care settings.

b12. Write a thesis protocol using a scientific systematic approach to a research problem.

c) **Professional and Practical Skills:**

c1. Practice identification of different bacteria using different biochemical tests, API systems to differentiate between pathogenic and non-pathogenic strains of medically important bacteria or emergence of a new pathogen.

c2. Practice identification of emerging new pattern of antimicrobial resistance using the disk diffusion method and subsequently alerting the clinicians

c3. Apply the methods used for microbiological environmental sampling, air sampling, food sampling and for environmental surface sampling.

c4. Apply different disinfection and sterilization processes used in the decontamination of heat resistant and heat-sensitive objects and gain skills to reprocess the single use care items.

c5. Employ the validity of sterilization process using the different physical, chemical and biologic indicators.

c6. Practice decontamination process in Central sterilization service department and compute problems of storage /release and distribution of sterile products.

c7. Apply proper Standard precautions practices including; hand hygiene, waste management and proper donning and removal of PPE and choosing the proper PPE depending on transmission based precautions, Practice respiratory etiquette, Perform proper linen management and Develop skills to prepare an isolation room.

c8. Assess the validity of the infection control practices related to each medical health care setting including: Intensive care unit/ respiratory care , Neonatal Intensive care unit, Operating Theatre, Dentistry clinic, Hemodialysis Unit, Cardiac catheterization Unit, Endoscopy Unit, Laboratory Department and in Radiation and Oncology Unit.

d) **General and Transferable Skills:**

d1. Communicate through group discussion

d2. Develop skills in data analysis

d3. Develop skills in (Problem Solving)

d4. Work as a part of team

d5. Develop skills in reading and research

d6. Develop skills to work safely in a laboratory environment

3- ACADEMIC STANDARDS

3a External references for standards (Benchmarks)

Generic Academic Reference Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) adopted at MRI council 12/2/2014 and readopted at 15/1/2023.

Last date of Academic Reference standards (ARS) approval by Institute Council: 15/1/2023.

3b Comparison of provision to selected external references

Generic Academic Standards	ARS of Master of Infection control and management
A1. Basic facts, theories, of the specialty and related subjects/ fields	a1. Identify the key concepts and principles of IC . a2. Recognize the Organizational structure and job description for IC positions. a3. Define the Role of microbiology department in infection control and the microbiological testing process and the importance of close interaction between the medical microbiologist/clinical scientist and the rest of hospital employees. a4. Outlines IC policies related to construction of hospital building and to the different aspects of hospital environment (air, water and food). a5. Know the infection control practices provided in the different special high risk settings within the hospital a6. List the IC aspects of occupational health and safety and the advanced occupational safety issues. a7. outline the basis of sterilization and disinfection and a working knowledge of the policies and procedures used in local hospitals. a8. Describe the different mechanisms of action of and bacterial resistance to antimicrobial agents.
A2- Mutual relation between professional practice and effects on environment	a.3. the importance of close interaction that occurs between the medical microbiologist/clinical scientist and the rest of hospital employees. infections & its prevention a.9.Understand the different types and causes of Health care associated infections & its prevention a.10.Describe the Surveillance strategies of nosocomial infections and the management of outbreaks

	a.11.Know the IC strategies for the Common organisms causing HCAIs including multi-drug resistant organisms
A3- Recent advances in the field of practice.	a.6. Understand the IC aspects of occupational health and safety and the advanced occupational safety issues. a1. Describe current hot topics and important concepts in the field of infection control
A4-Details of ethical & legal practice. A5 -Quality standards of the practice.	a 6.Recognize the details of ethical and legal practice and quality standards of the practice and the recent advances in the field of infection control
A7- Ethical considerations in different types of scientific research.	a 12. summarize ethical consideration in different types of scientific research through thesis
B1- Analyze, deduce, extrapolate & evaluation of information	b.1.Critically analyze the relationships between human and micro-organisms b2 - Explain the role of the infection control practitioner and Evaluate risk assessment and program management. b4-Demonstrate the different aspects of hospital environment and illustrate the importance of construction of hospital building according to infection control policies. b7- Apply basic principles of decontamination to clinical practice and Measure compliance with regulations and standards. b9-Develop and recommend policies and procedures related to IC and Assess the educational needs of health care workers
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete)	b3- Analyze according to evidence the causal relationship of microbes and diseases. and formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions.
B3- Conduct research studies that add to the existing specialty knowledge	b12.Prepare a protocol for the conduct of a structured iterative review
B4- Publish scientific articles/papers (in indexed journals)	b-12Write a thesis protocol using a scientific systematic approach to a research problem.

B5- Plan and implement (or supervise implementation of) enhancement & Improvement approaches to practice	b10- Critically appraise strategies suggested for surveillance and process validation and recognize and investigate outbreaks and Interpret strategies used in disaster management
B6- Take decisions in various professional situations (including dilemmas & controversial issues)	b11- Formulate a systematic approach for preventing the transmission of bloodborne pathogens and other communicable diseases (TB) and for dealing with cases accidentally exposed to certain pathogens in health care settings
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department)	C1:Gain skills in identification of different bacteria using different biochemical tests, API systems to differentiate between pathogenic and non-pathogenic strains of medically important bacteria or emergence of a new pathogen. C2:Acquire skills in identification of emerging new pattern of antimicrobial resistance using the disk diffusion method and subsequently alerting the clinicians C3: Practice and display the methods used for microbiological environmental sampling , air sampling , food sampling and for environmental surface sampling. C4: Perform and interpret different disinfection and sterilization process used in the decontamination of Heat resistant and Heat-sensitive objects and Gain skills to reprocess the single use care items. C7: Display proper Standard precautions practices including; hand hygiene, waste management and proper donning and removal of PPE and choosing the proper PPE depending on transmission based precautions ,Practice respiratory etiquette , Perform proper linen management and Develop skills to prepare an isolation room.
C2- Write and appraise reports	C5:Gain skills to assess the validity of sterilization process using the different physical ,chemical and biologic indicators
C3- Evaluate and improve methods and tools used in specialty	C6:Practice the flow of decontamination process in Central sterilization service department and solve problems of storage /release and distribution of sterile products.

	C8:Assess the validity of the infection control practices related to each medical health care setting including : Intensive care unit/ respiratory care , Neonatal Intensive care unit, Operating Theatre , Dentistry clinic, Hemodialysis Unit , Cardiac catheterization Unit, Endoscopy Unit, Laboratory Department and in Radiation and Oncology Unit
D1- Communicate effectively using all Methods	d.1. Communicate through group discussion d.2. Work as a part of team
D2- Use information technology to improve his/her professional practice	d.3. Develop skills in information technology d.4. Develop skills for oral presentation d.5. Develop skills in reading and research
D3- Teach and evaluate others	d.4. Develop skills for oral presentation d.5. Develop skills in reading and research d.6. Develop skills to work safely in a laboratory environment
D4- Perform self-appraisal & seek continuous Learning	d.3. Develop skills in information technology d.5. Develop skills in reading and research
D5- Use different sources of information to obtain data	d.3. Develop skills in information technology d.5. Develop skills in reading and research
D6- Work in teams as well as a member in larger teams	d.2. Work as a part of team
D7- Manage scientific meetings and appropriately utilize time	d.3. Develop skills in information technology d.4. Develop skills for oral presentation d.5. Develop skills in reading and research

4- CURRICULUM STRUCTURE AND CONTENT:

4.a. Program duration: 3.5 Years

4.b. Program Structure:

4.b.i. Number of hours per week in each year/semester

Semester	Core Courses	Elective Courses (any two)
	No. of hours	**No. of hours**
First semester	Introduction and goals of IC (2 CH) Role of microbiology department in infection control (3CH) Antimicrobial resistance (1 CH) **Total (6 CH)**	**Parasitology (2CH)**
Second semester	Hygiene &decontamination (3 CH) Health care associated infections & its prevention (4 CH) **Total (7 CH)**	**Bacteriology (2 CH)**
Third semester	Hospital environment I (3 CH) Hospital environment II (3 CH) Occupational safety &employee health(1 CH) **Total (7 CH)**	**Immunology (2 CH)**
Fourth semester	Surveillance of HCA infections (2 CH) Common organisms causing nosocomial infection (2CH) Organization (2 CH) **Total (6 CH)**	**Chemical pathology (2 CH)**

4.b.ii. Number of Credit hours:

Lectures	**(23)**	**Practical**	**(7)**	**Thesis**	**8**	**Total**	**(38)**
Compulsory	**(26)**	**Elective**	**(4)**	**Optional**	**(0)**		

4.b.iii- No. of credit hours of specialized courses	No.	(26)	%	(86.7)
4.b.iv- No. of credit hours of other	No.	(2)	%	(0)

4.b.v- Program levels (in credit-hours system)

Student is required to pass at least 12 credit hours with CGPA not less than C+ before submitting a thesis proposal.

5-PROGRAM COURSES

5.1 Compulsory courses

Code No	Course Title	No of Credit Hours	No of hours/week	
			Lectures	Practical
1706791	Introduction and goals of IC	2	2	-
1706792	Organization	2	2	-
1706793	Role of microbiology department in infection control	3	2	2
1706794	Hospital environment I	3	2	2
1706808	Hospital environment II	3	2	2
1706795	Occupational safety &employee health	1	1	-
1706796	Hygiene &decontamination	3	2	2
1706797	Antimicrobial resistance	1	1	-
1706798	Health care associated infections & its prevention	4	3	2

1706799	Surveillance of HCA infections	2	2	-
1706800	Common organisms causing nosocomial infection	2	2	-
Total		26	21	10

5.2 Elective Courses I

Code No	Course Title	No of Credit Hours	No of hours/week	
			Lectures	Practical
1706720	Bacteriology	2	1	2
1707720	Parasitology	2	1	2
1708720	Immunology	2	1	2
1717720	Chemical Pathology	2	1	2

5.3 Elective Courses II

(None)

5.4. Optional:

(None)

6- PROGRAM ADMISSION REQUIREMENTS

Graduate students with bachelor of medicine, nursing, dentistry, science , pharmacy , veterinary , or equivalent degrees from an accredited university who are interested in specializing in infection prevention and control or who have an interest in infection prevention as part of health management.

7- TEACHING A LEARNING METHODS

Lecture
Practical
Seminars/ Tutorials
Assignments
Brainstorming
Discussion Groups
Problem Solving
Case Study
Field Training
Role playing

8- REGULATIONS FOR PROGRESSION AND PROGRAM COMPLETION

For the progression and completion of the program to obtain the degree of Master of Science in Diagnostic and Molecular Microbiology, the student must:

1- Complete 30 credit hours with CGPA of at least C+ through courses.
2- Complete 8 credit hours through thesis.
3- Submit a thesis validity report by an examination committee approved by the department council and their members include at least two external examiners.

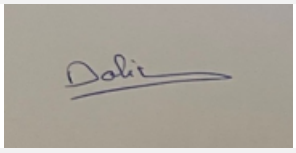
8- EVALUATION OF PROGRAM INTENDED LEARNING OUTCOMES

Tool evaluation	Intended learning outcomes being assessed
Written	ILOs a &b
Practical	ILOs c
Oral	ILOs a ,b &d
Semester Work	ILOs b & d

Evaluation of the Program

Evaluator	Tool	Sample
1- Senior students	questionnaire	At least 50 %
2- Alumni	questionnaire	Representative sample
3- Stakeholders (Employers)	meeting	Representative sample
4- External Evaluator(S) or External Examiner (s)	Reports	Prof. Dr. Maha Abdel Aziz Ahmed Eltouny .
5- Other		

Department of Microbiology

Program Coordinator:	**Prof. Dr. Eglal Elsherbini**
	
Head of Department:	**Prof. Dr Dalia Rageb**
Signature	
Date of Department Council Approval	**30/8/2023**

Program Aims vs Graduate Attribute matrix

Generic Graduate Attributes of NAQAAE	**Graduate Attributes of Master of Science in Infection Control and Management** **By the end of this program, Graduate of of Master of Science in Infection Control and Management *should be able to***	**Program Aims**
1-Apply specialized knowledge related to professional skills in the field of specification.	Apply specialized knowledge related to the field of Infection Control in the Health Care Setting. Discuss the basis of sterilization and disinfection and a working knowledge of the policies and procedures used in local hospitals.	Enhance understanding he Importance of Infection Control Program and importance of Infection Control discipline in the Health Care Setting
2-Identify professional problems in the field of specification and propose solutions to them.	Identify the most common problems associated with HCAI and Emphasize the close field interaction that occurs between the medical microbiologist/clinical scientist and the hospital employee to implement the infection control and prevention to solve the problem	Enable the student to formulate a management strategy to care for infectious patients and prevent further spread of disease.
3-Master professional skills in the field of specification.	Assess the validity of the infection control practices related to each department and special unit in the health care setting	Emphasize the role of an effective occupational health program in the healthcare setting.
4-Use appropriate technology means in his/her professional practice of the field of specification.	Use appropriate screening tools and monitoring strategies to appraise the infection control practices provided in the special high risk settings within the hospital	Provide the infection control practitioners and other staff with a systematic training in the sciences relevant to infection control.
5-Communicate and lead work teams in a systematic, professional manner.	Design a systematic approach for preventing the transmission of blood-borne pathogens and other communicable diseases and for dealing with cases accidentally exposed to certain pathogens in health care settings	Emphasize the close interaction that occurs between the medical microbiologist/clinical scientist and the hospital employees.
6-Take professional decisions in case of available information.	Describe the Surveillance strategies of health care associated infections to Take professional decisions and to	Enable the student to develop strategies for surveillance,

	manage outbreaks of Common organisms causing HCAIs including multidrug resistant organisms	control and prevention of infection in the different departments in hospital and also in the community.
7-Use available resources efficiently.	Take responsibility for, the infection control service and apply proper Standard precautions practices .	Enable the infection control practitioners and other staff to take responsibility for, the infection control service
8-Relate his/her studies to community development and environmental preservation.	Identify causes , transmission and risk factors associated with HAIs in different healthcare settings and to. demonstrate awareness of health problems related to the community	Enhance understanding of the nature of communicable disease.
9-Act in a manner that reflects a commitment to integrity, credibility, professionality, and accountability.	Work with others within their own clinical team to agree and work towards goals; Work successfully with other disciplines to implement the quality concepts in infection control	Enable the student to understand the importance of development of a clear and firm organizational structure to achieve reduction in infection rates among patients and staff.
10-Realize the need for self-development and engaging in continuous learning.	Develop skills in information technology and in reading and research for self-development and engaging in continuous learning.	Use systematic approaches to design and conduct scientific research

*Program Aims vs ILOs matrix

Program Aim	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	c1	c2	c3	c4	c5	c6	C7	C8	d1	d2	d3	d4	d5	D6
I	X								x				x			x	x	x	x											x	x	x	x	x	x	x	
II		x												x				x				x											x	x	x	x	x	
Iii			x					x							x			x	x	x	x				x	x	x						x	x	x	x		
Iv						x								x				x															x	x	x	x		
V				x	X		x	x	x										x	x	x		x					x	x	x	x	x	x	x	x	x		x
Vi				x	X						X		x					x					x			x							x	x	x	x	x	x
vii							x	x	x	x				x		x	x					x									x	x	x	x	x	x		x
Viii			X	x	X	x	x	x	x	x	X				x				x	x	x				x								x	x	x	x		
Ix		x	x			x	x	x	x	x				x	x	x	x	x	x	x	x		x		x		x	x	x	x			x	x	x	x		X
x												x												x													x		

Courses vs Program ILOs matrix

Course title	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	c1	c2	c3	c4	c5	c6	c7	c8	d1	d2	d3	d4	d5	D6
Introduction & goals of IC	x		x										x																				x	x	x	x	x	x
Organization		x												x	x																		x	x	x	x	x	
Role of microbiology department in IC			x	x												x									x	x							x	x	x	x		
Hospital environment I					x									x		x	x										x							x	x	x	x		x
Hospital environment II					x	x								x		x	x															x		x	x	x	x		
Occupational safety &employee health					x		x									x		x																x	x	x	x	x	x
Hygiene & decontamination				x				x								x		x	x	x								x	x	x				x	x	x	x		
Antimicrobial resistance								x	x						x	x			x	x														x	x	x	x		
Health care associated infections & its prevention								x	x	x					x				x	x	x										x			x	x	x	x		x
Surveillance of HCA infections									x	x	x		x	x	x					x	x	x												x	x	x	x		

Common organisms causing nosocomial infection								x								x		x	x				x							x	x	x	x						
Thesis											x											x													x				

*ARS vs ILOs matrix

ARS of Master of IC and management	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6
A1. **Basic facts, theories, of the specialty and related subjects/ fields**																																						
a1	x																																					
a2		x																																				
a3			x																																			
a4				x																																		
a5					x																																	
a6						x																																
a7							x																															
a8								x																														
A2- Mutual relation between professional practice and effects on environment																																						
a3			x																																			
a9									x																													

a10										x																										
a11											x																								
A3- **Recent advances in the field of practice.**																																			
a1	x																																		
a6						x																													
A4-Details of ethical & legal practice. **A5 -Quality standards of the practice.**																																			
a2		x																																	
-A7- Ethical considerations in different types of scientific research.																																			
a12												x																							
B1- Analyze, deduce, extrapolate & evaluation of information																																			
b1													x																						
b2														x																					
b4																x																			
b7																			x																
b9																					x														
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete)																																			

b3														x																							
B3,Conduct research studies that add to the existing specialty knowledge																																				
b12																						x														
B4- Publish scientific articles/papers (in indexed journals)																																				
b12																						x														
B5- Plan and implement (or supervise implementation of) enhancement & Improvement approaches to practice																																				
b10																				x																
B6- Take decisions in various professional situations (including dilemmas &controversial issues)																																				
b11																					x															
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department)																																				
c1																							x													
c2																								x												
c3																									x											
c4																										x										
c7																												x								

C2- Write and appraise reports																																						
c5																												x									
C3- Evaluate and improve methods and tools used in specialty																																						
C6																													x								
C8																															x						
D1- Communicate effectively using all Methods																																						
d1																																x					
d2																																	x				
D2 Use information technology to improve his/her professional practice																																						
d3																																		x			
d4																																			x		
d5																																				x	
D3- Teach and evaluate others																																						
d4																																			x		
d5																																				x	
d6																																					x

D4- Perform self-appraisal & seek continuous Learning																																					
d3																																	x			
d5																																			x	
D5. Use different sources of information to obtain data																																					
d3																																	x			
d5																																			x	
D6- Work in teams as well as a member in larger teams																																					
d2																																x				
D7- Manage scientific meetings and appropriately utilize time																																					
d3																																	x			
d4																																		x		
d5																																			x	

Department of Microbiology

Teaching methods vs Course matrix

	Introduction & goals of IC 1706791	Organization 1706792	Role of microbiology department in IC 1706793	Hospital environment I 1706794	Occupational safety & employee health 1706795	Hygiene & decontamination 1706796	Antimicrobial resistance 1706797	Health care associated infection 1706798	Surveillance of Health care associated infections 1706799	Common organisms causing HCAI 1706800	Hospital environment II 1706808
Lecture	*	*	*	*	*	*	*	*	*	*	*
Practical			*			*		*			
Seminars/ Tutorials	*	*			*		*			*	
Assignments	*	*	*	*	*	*	*	*	*	*	*
Brainstorming				*					*		
Discussion Groups	*	*	*				*		*	*	*
Problem Solving				*	*			*			
Case Study					*			*			
Field Training				*		*		*			*
'											
Training Workshops						*					
Self-Directed Learning					*	*					*
e-learning											

Project											